Swedish people's opinion on sun and wind

by
Per Hedberg

SOM-INSTITUTET
samhälle opinion massmedia
GÖTEBORGS UNIVERSITET

Energimyndigheten

Printed by EU Working Group on Energy Technology Surveys and Methodology (ETSAM). Brussels 2005

Swedish people's opinion on sun and wind

Per Hedberg

Energy issues are at the bottom of the list of the issues that people in Sweden consider important. At the top of the list are healthcare, employment and education. Only one per cent mention energy issues as important.[1] However, this does not mean that the Swedish people do not have opinions when it comes to energy issues. On the contrary, people take a clear stand on the question of what types of energy Sweden should invest more in or abandon in the future. Since 1999 SOM (Society, Opinion and Media) surveys have included a question on what energy sources we should invest in in the future. The question covers eight energy sources: water power, wind power, solar energy, nuclear power, bio fuels, fossil/natural gas, coal and oil. The results of the latest SOM survey and of the five previous surveys are shown in Table 1.[2]

Of the energy sources we are asking about, solar energy and wind energy are without doubt the most popular. The results of the 2004 SOM survey show that 79% of the Swedish population want to invest more in solar energy than is done today. The corresponding figure for wind power was 73%. This is followed by water power and bio fuels in which 47% and 45% respectively want to invest more. For natural gas and nuclear power the figures are 30% and 14% respectively. Increased investment in coal and oil is almost entirely lacking in support among the population. Only 2% want to see increased investment in these two energy sources. 77% think that we should entirely abandon coal or invest less in it than we do today. The corresponding figure for oil is 73%.

The results also point to opinions being stable over the six years that we have asked the question. There have been no dramatic changes. However, small shifts can be seen with regard to nuclear power and wind power. The opinion on nuclear power has become somewhat more positive. The proportion of people who want to invest more in nuclear power increased from 9% in 1999 to 14% in 2004, while the proportion of people who want to entirely abandon nuclear power as an energy source fell from 20% to 16%.[3] Support for increased investment in wind power fell by ten percentage points from 74% to 64% between 1999 and 2003, but the most recent survey points to a recovery, and in 2004 the proportion that wished to invest more in wind power was again in line with the earliest surveys (73%).[4] It is difficult to say what has influenced opinion. It could perhaps be speculated that publicity surrounding local debates on the establishment of wind power caused opinion to waver somewhat in 2002 and 2003. For example, the only referendum so far on the development of wind power in the Municipality of Skurup in 2002 resulted in a close no vote. One reason for the increased support in 2004 could be that, at a time of high prices for electricity and oil and the impending closure of Barsebäck 2, people are increasingly seeking alternatives to the dominant energy sources, and wind power could be one.

The planned expansion of wind power therefore has strong support among the Swedish people. But the question is whether the support is equally large among all groups of society or whether it varies from group to group, and, in that case, whether there have been any changes since measurements began in 1999. Table 2 shows the proportions of people who want to see greater investment in wind power among people in various social groups, among people supporting various parties and among people with different ideologies in the years from 1999 to 2004.

Table 1 What energy sources should Sweden invest in? (per cent)

question: "How much should we in Sweden invest in the following energy sources over the next 5 to 10 years?"

	response options					
energy sources and year of survey	invest more	invest roughly the same as today	invest less than today	entirely abandon the energy source	no opinion	total per cent
water power						
1999	41	44	6	1	8	100
2000	39	48	6	1	6	100
2001	40	46	7	1	6	100
2002	44	45	4	1	6	100
2003	44	44	4	1	7	100
2004	47	41	5	1	6	100
wind power						
1999	74	14	3	1	8	100
2000	72	17	4	2	5	100
2001	71	16	5	2	6	100
2002	68	19	5	2	6	100
2003	64	22	5	2	7	100
2004	73	16	3	2	6	100
solar energy						
1999	77	11	2	1	9	100
2000	77	14	2	1	6	100
2001	75	14	3	1	7	100
2002	77	14	2	1	6	100
2003	75	15	1	1	8	100
2004	79	12	2	1	6	100
nuclear power						
1999	9	34	26	20	11	100
2000	11	34	30	19	6	100
2001	11	36	29	18	6	100
2002	12	37	29	16	6	100
2003	16	38	24	15	7	100
2004	14	36	27	16	7	100
bio fuels						
1999	29	27	13	3	28	100
2000	44	28	10	3	15	100
2001	46	29	8	2	15	100
2002	45	32	8	1	14	100
2003	44	29	8	2	17	100
2004	45	30	9	2	14	100
fossil/natural gas						
1999	21	26	17	5	31	100
2000	30	32	17	4	17	100
2001	31	32	16	4	17	100
2002	32	35	14	3	16	100
2003	30	31	15	4	20	100
2004	30	33	17	4	16	100
coal						
1999	1	9	39	34	17	100
2000	2	10	39	37	12	100
2001	2	11	38	38	12	100
2002	2	13	41	33	11	100
2003	2	10	35	38	15	100
2004	2	10	41	36	11	100
oil						
1999	2	17	48	18	15	100
2000	2	20	52	16	10	100
2001	2	19	51	17	11	100
2002	2	22	50	16	10	100
2003	2	20	47	18	13	100
2004	2	15	53	20	10	100

Comments: The results only include respondents who put crosses for a response option. The proportion of people who skipped the various sub-questions varies from 6% to 9% over the years.

Table 2 Proportion of people positive towards investing more in wind power by social group, party preference and ideology 1999-2004 (per cent)

	1999	2000	2001	2002	2003	2004
gender						
male	72	71	70	66	63	72
female	75	73	73	69	65	73
age						
15-30	69	74	69	67	62	70
31-60	76	73	77	70	70	79
61-85	72	68	63	62	54	63
place of residence						
rural area	80	82	80	72	73	81
small built-up area	77	72	71	70	62	74
town, large built-up area	70	70	70	67	63	69
the three big cities	74	65	69	65	61	76
education						
basic level	71	71	67	66	59	66
intermediate level	74	73	71	68	63	75
university	74	72	79	68	71	75
party preference						
Left Party	86	81	85	80	75	82
Social Democrats	72	72	70	66	62	70
Centre Party	80	90	80	79	76	82
Liberal Party	84	81	79	70	63	69
Moderate Party	63	59	62	48	54	65
Christian Democrats	72	69	72	69	66	68
Green Party	87	84	87	86	77	92
left-right dimension						
firmly on the left	87	81	76	75	79	83
somewhat on the left	77	79	79	74	69	80
neither left nor right	72	73	69	65	63	69
somewhat on the right	71	69	69	64	60	71
firmly on the right	61	54	63	56	57	63
green dimension						
firmly green	83	82	85	--	--	83
somewhat green	80	78	75	--	--	78
neither green nor grey	70	71	69	--	--	68
somewhat igrey	70	65	65	--	--	69
firmly grey	49	52	53	--	--	69
all respondents	74	72	71	68	64	73

Comments: People who did not respond to the question are not included in the percentage base. The wording of the question is shown in Table 1. The measure of the green dimension is based on a question about an environmentally friendly society. The question is phrased as a proposal where the respondent is asked to judge whether the proposal is very good, quite good, neither good not bad, quite bad or very bad. The wording of the question was: "Invest in an environmentally friendly society even if it entails low or zero growth". In the table the scale from "very good proposal" to "very bad proposal" has been translated into points on a green-grey dimension where "very good proposal" corresponds to "firmly green" and "very bad proposal" corresponds to "firmly grey". People's left-right ideology was measured through a self-classification question.

In general the link to various social background characteristics is very weak or almost non-existent. Between 1999 and 2004 women were somewhat more positive towards wind power than men, but the differences are small and have never exceeded three percentage points. In the most recent survey the difference was insignificant. People in the 31-60 age group were on each occasion, with the exception of the year 2000, somewhat more positive than people in the youngest and oldest age groups. Throughout the survey period, people who live in wholly rural areas have been somewhat more positive towards an expansion of wind power than people living in small built-up areas, towns or cities. On the whole, the level of education appears to be of no significance for people's opinions on wind power. However, there is a very weak pattern showing that, over the six years surveyed, people with only basic education were somewhat less positive towards increased investment in wind power than people with a short or long period of further education. The increase in willingness to invest more in wind power which is seen between 2003 and 2004 can be found in all groups. The greatest increase

was among those living in the three cities (up 15 percentage points) and the smallest was among people with university or college education (up 4 percentage points).

Support for wind power is large among supporters of all parties. However, there are small differences in degree. In the most recent survey, support is greatest among supporters of the Green Party (92%), the Left Party (82%) and the Centre Party (82%). Among supporters of other parties support for increased investment in wind power lies between 65% among Moderates and 70% among Social Democrats. The pattern of strong support for wind power among supporters of the "green" parties reflects that found in previous surveys. The greatest change since 1999 is among supporters of the Liberal Party. From having been one of the most pro wind power, the proportion who want to invest more in wind power fell from 84% in 1999 to 69% in 2004. The figures for other parties in 2004 are just over or just under the 1999 results. It is also notable that support for wind power among Moderate Party supporters has increased from 48% to 65% over the past three years.

Ideologically there is a weak link to the left-right scale of Swedish politics. People who place themselves on the left are somewhat more positive towards wind power than people who place themselves on the right. In the 2004 survey the proportion who wanted to invest more in wind power was 83% among those who place themselves firmly on the left, compared with 63% among those who place themselves firmly on the right. The pattern is the same throughout the survey period. The question which forms the basis for determining green ideology was not asked in 2002 and 2003. In the years 1999 to 2001 there was a clear link between green ideology and opinions on wind power inasmuch as people who placed themselves firmly in the green corner were more positive than people who placed themselves in the grey corner. The 2004 survey points to a somewhat weaker link. Support is still greatest among people who place themselves firmly in the green corner (83%), but people who place themselves firmly in the grey corner have become more positive than before (69%). If we compare the 1999 figures with the 2004 figures we find them largely identical, with one exception. Among people who place themselves firmly in the "grey" corner the proportion who want to invest more in wind power increased by 20 percentage points from 49% to 69%.[5]

In Autumn 2004 the Swedish Energy Agency (Energimyndigheten) presented 49 locations in 13 counties which are considered suitable for the building of wind farms. The question is whether the residents in different counties have different opinions with regard to investment in wind power, and what are opinions like in the counties which the Swedish Energy Agency considers suitable for the development of wind power? The SOM surveys are based on a random sample in the country as a whole. When the data is broken down by county, small counties are represented by only a few people, which entails statistical uncertainty. The results in Table 3 are therefore based on all six years' SOM surveys and includes 9 756 people who answered the question of how much they want to invest in wind power. The lowest number of people were in the County of Gotland (49).[6] The results are shown in the form of a net balance where the proportion who want to invest less than today or want to entirely abandon the energy source has been subtracted from the proportion who want to invest more in the energy source.

Regardless of the region there is a majority who want to invest more in wind power than is the case today. The regional differences are small. The least positive are the populations of Gotland (+47), Skåne (+52) and Halland (+54). The most positive are the populations of Kopparberg County (+75), Västerbotten (+75), Jämtland (+73) and Norrbotten (+73). In simple terms there is a somewhat more positive attitude towards wind power in the north than in the south. The results in Table 3 also show that there are

small differences between the three cities. The people of Malmö (+48) are less positive towards investment in wind power than those of Stockholm (+60) and Gothenburg (+70).

The table shows in parentheses the number of locations in the county which the Swedish Energy Agency considers suitable for wind power. Of the 49 locations considered suitable, 20 are in Halland, Skåne and Gotland, i.e. in the counties where the opinion is the *least* positive. The net balance for the country as a whole is +64. In counties where no wind farms are planned the average net balance is +69; in counties where at least one site for wind farms is planned the average is +63; and in counties where, according to the plans, it is suitable to establish wind power on more than three sites the average is +60.[7] The differences are very small and the overall result is that the attitude towards wind power is positive regardless of where people live in the country, but most positive where the Swedish Energy Agency is *not* recommending that wind farms be located.

Table 3 Support for increased investment in eight energy sources among inhabitants of Sweden's counties, consolidated over the period 1999 – 2004 (net balance)

County	wind power		water power	solar energy	nuclear power	bio fuels	natural gas	coal	oil
Stockholm	+59	(1)	+36	+71	-23	+28	+12	-72	-66
Uppsala	+61	(3)	+26	+71	-28	+22	+1	-71	-64
Södermanland	+66	(1)	+28	+76	-29	+23	+2	-71	-64
Östergötland	+64	(1)	+33	+73	-34	+32	+2	-71	-64
Jönköping	+66		+45	+72	-41	+37	+16	-78	-73
Kronoberg	+60		+38	+65	-33	+33	+7	-72	-64
Kalmar	+68	(5)	+40	+72	-33	+30	+7	-75	-64
Gotland	+47	(4)	+27	+81	-48	+23	+7	-71	-63
Blekinge	+63	(2)	+37	+70	-30	+32	+9	-74	-63
Skåne	+52	(7)	+38	+70	-20	+26	+15	-74	-64
Halland	+54	(9)	+40	+76	-27	+27	+8	-79	-67
Västra Götaland	+69	(3)	+42	+78	-37	+34	+13	-73	-67
Värmland	+72	(6)	+43	+79	-41	+33	+1	-74	-63
Örebro	+72		+33	+75	-37	+23	+4	-67	-61
Västmanland	+64		+37	+68	-27	+24	+2	-68	-67
Kopparberg	+75		+36	+83	-50	+35	+13	-74	-69
Gävleborg	+67	(6)	+35	+76	-38	+28	+7	-70	-65
Västernorrland	+70		+38	+79	-42	+33	+5	-72	-66
Jämtland	+73	(1)	+15	+76	-49	+39	-2	-67	-67
Västerbotten	+75		+26	+78	-56	+38	+2	-73	-72
Norrbotten	+73		+25	+76	-48	+32	±0	-71	-69
Stockholm Municipality	+60		+32	+72	-26	+29	+12	-71	-66
Gothenburg Municipality	+70		+44	+76	-36	+29	+19	-66	-61
Malmö Municipality	+48		+37	+63	-22	+19	+12	-73	-66
Whole country	+64		+37	+74	-33	+30	+9	-72	-65

Comments: People who did not respond to the question are not included in the percentage base. The wording of the question is shown in Table 1. The net balance was arrived at by subtracting the proportion of people who responded "invest less than today" or "entirely abandon the energy source" from the proportion of people who responded "invest more than today". The figures in parentheses in the column for wind power show the number of locations the Swedish Energy Agency has judged to be suitable for the establishment of wind power in the county concerned.

The region plays only a very modest role when it comes to the question of the energy sources in which the Swedish people think more or less should be invested in future. Small regional differences do exist, particularly with regard to wind power, but also for nuclear power and water power. People in northern counties are somewhat more negative to further investment in nuclear power than people in, for example, the counties of Skåne, Stockholm and Halland. In the counties of Jämtland, Västerbotten and Norrbotten people

are also somewhat less positive towards increased investment in water power than people in many other counties, but the differences are small.

Another factor which could hypothetically affect people's attitudes to various energy sources could be the energy systems they themselves use to heat their own homes. The hypothesis is based on an idea of self-interest which is expressed in a more positive view of the energy source people themselves use to heat their home. Those who use bio fuels to heat the house should be more positive towards bio fuels than others; those who have oil-fired heating should be more positive towards oil as an energy source than others; and those who only use electricity for heating their home should be more positive towards nuclear energy than others.

Table 4 shows views on nuclear energy, oil and bio fuels among people who use only electricity, oil or bio fuels to heat their homes. The analysis only relates to people who live in detached or terraced houses. In addition, it shows attitudes to nuclear power, oil and coal among all people who live in detached or terraced houses and among all people who responded to the question.

Table 4 Opinions on which energy sources Sweden should invest in, by how the person's own detached/terraced house is heated (per cent)

energy sources and heating of own home	invest more than today	invest roughly the same as today	invest less than today	entirely abandon the energy source	no opinion	total per cent	net balance
nuclear power							
heating only with electricity	17	37	28	12	6	100	-23
heating only with oil	14	32	34	14	6	100	-34
heating only with bio fuels	8	30	32	18	12	100	-42
all people living in detached/ terraced houses	16	36	28	14	6	100	-26
all respondents	14	36	27	16	7	100	-29
oil							
heating only with electricity	2	13	56	22	7	100	-76
heating only with oil	0	21	63	5	11	100	-68
heating only with bio fuels	1	16	49	22	12	100	-70
all people living in detached/ terraced houses	2	14	57	19	8	100	-74
all respondents	2	15	53	20	10	100	-71
bio fuels							
heating only with electricity	46	29	11	2	12	100	+33
heating only with oil	44	29	5	2	20	100	+37
heating only with bio fuels	47	36	4	1	11	100	+42
all people living in detached/ terraced houses	47	31	9	1	12	100	+37
all respondents	45	30	9	2	14	100	+34

Comments: People who did not respond to the question are not included in the percentage base. The wording of the question is shown in Table 1. People living in detached or terraced houses were asked a completely open question about which energy sources were used to heat their own homes. The analysis includes people who responded that their home was heated only by electricity, only by oil or only by bio fuels. In addition, the results are shown for all people living in detached/terraced houses and for all people who responded to the question. The net balance was arrived at by subtracting the proportion of people who responded "invest less than today" or "entirely abandon the energy source" from the proportion of people who responded "invest more than today".

People's views on what energy sources we should invest in are affected only to a very small extent by what system they themselves have to heat their own homes, but the weak effects which can be discerned do conform to the hypothesis. People who use only electricity to heat their homes are somewhat less negative towards nuclear energy (-23) than people who use only oil (-34) or bio fuels (-42). Views on oil and bio fuels are hardly affected at all by whether people themselves heat their homes with only oil or bio fuels. But even here the very weak tendencies point in the direction of the hypothesis. People who use only bio fuels for heating are somewhat more positive towards bio fuels as an energy source (+42) than people who use electricity (+33) or oil (+37). People who

use only oil to heat their homes are somewhat less negative towards oil as an energy source (-68) than people who use bio fuels (-70) or electricity (-76). Above all there is a smaller proportion of those who use oil who want to completely abandon the energy source (5%) than of those who use electricity (22%) or bio fuels (22%).

Views on nuclear power are somewhat more positive among people who heat their homes with electricity than among all house owners or among the population as a whole. Views on oil are not as negative among people who have oil-fired heating in their homes as among all house owners or among the population as a whole. Views on bio fuels are also somewhat more positive among those who heat their homes with bio fuels than among all house owners or among the population as a whole. However, the main finding of the analysis is that the heating systems people use for their own homes are almost insignificant when it comes to opinions on what energy sources Sweden should use in future, although the connection between opinions on nuclear power and heating by electricity is perhaps not uninteresting.

The results of the 2004 SOM survey show overall that views on how much Sweden should invest in various energy sources are stable. Only small changes have taken place over the six years surveyed. One of them concerns the opinion on wind power. What appeared to be a slight downward trend in the positive view of wind power between 1999 and 2003 was broken in 2004 and now the Swedish people are as positive towards wind power as they were at the beginning of the measurement series. Whether 2003's "low" figures for wind power were a temporary dip or whether 2004's high figures are only a short-term flourish will be answered by future surveys.

NOTES

[1] See Holmberg and Weibull (2005a) and Holmberg and Weibull (2005b)
[2] The Survey on Swedish energy opinions is part of the research project *Energiopinionen i Sverige* (Energy Opinions in Sweden) which is financed by the Swedish Energy Agency
[3] See Holmberg (2005) on Swedish opinions on nuclear energy.
[4] The research project *Energiopinionen i Sverige* also includes a question on how the population would view the establishment of wind power in their own municipality. The question is phrased "Hur ställer Du Dig till en etablering av vindkraft i den kommun där Du bor?" ("What is your position on the establishment of wind power in the municipality where you live?") with the response options of very positive, quite positive, neither positive nor negative, quite negative or very negative. The pattern in the responses to this question is the same as in the question on how much we should invest in wind power, although the recovery in 2004 was somewhat weaker. The proportion of people who were positive towards the establishment of wind power in their own municipality was 74% in 1999, 70% in 2000, 70% in 2001, 66% in 2002, 59% in 2003 and 67% in 2004.
[5] See Holmberg (2005) for what factors structure opinion-forming on the nuclear power issue. When it comes to opinions on water power and natural gas there are no clear links with the independent factors in Table 3. The structuring of opinions on the issue of solar energy are mainly reminiscent of the factors which structure opinions on wind power. However, the link with the educational level is somewhat stronger. Among people with only basic education 70% were positive towards increased investment in solar energy, compared with 83% among people with college or university education. Bio fuels are somewhat more popular among men than among women, among people living in rural areas than among people living in towns, among the highly educated than among the less-well educated, among people who place themselves firmly on the left of the left-right scale than among people who place themselves firmly on the right, and among people who place themselves firmly in the green corner than among people who place themselves firmly in the grey corner. Age appears to have an effect on what Swedish people think of coal as an energy source, but is not significant when it comes to people's attitudes towards oil. Older people think more than younger people that we should totally abandon coal as an energy source. When it comes to both coal and oil, the proportion of people who want to abandon them is somewhat higher among men than among women.
[6] See Swedish Energy Agency (2004) and Dagens Nyheter (2004)
[7] Previous surveys have shown that, although the Swedish people overall have a positive attitude towards wind power as an energy source, their enthusiasm wanes when it becomes a question of an establishment close to their own home. In the 2000 SOM survey the proportion of people who wanted to invest more in wind power was 72%, while the proportion of people who were positive towards the establishment of a wind farm near to their own home was 41%. The corresponding figures in 2003 were 64% and 33% respectively (see Hedberg, 2004). The question of attitudes towards the establishment of wind power close to one's own home was not asked in the 2004 SOM survey.

REFERENCES

Dagens Nyheter (2004), 25 October

Swedish Energy Agency (2004). www.stem.se, under the search term "vindkraft". www.stem.se/WEB/STEMEx01Swe.nsf/F_PreGen01?ReadForm&MenuSelect=70E8C70E78795C65C1256F6D00344DDC&WT=Energitillförsel.Elproduktion.Riksintresse%20#vindkraft

Hedberg, Per (2004), "Vikande stöd för vindkraften", in Holmberg, Sören and Weibull, Lennart (eds.), *Ju mer vi är tillsammans*, SOM Report 34, Gothenburg: SOM Institute.

Holmberg, Sören (2005), "Kärnkraftanhängarna behåller ledningen", in Holmberg, Sören and Weibull, Lennart (eds.), *Lyckan kommer, lyckan går*, SOM Report 36, Gothenburg: SOM Institute.

Holmberg, Sören and Weibull, Lennart (2005a), "Lyckan kommer, lyckan går", in Holmberg, Sören and Weibull, Lennart (eds.), *Lyckan kommer, lyckan går*, SOM Report 36, Gothenburg: SOM Institute.

Holmberg, Sören and Weibull, Lennart (eds.) (2005b), Swedish Trends 1986-2004, Gothenburg: SOM Institute.